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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/920,374	07/31/2001	Christopher M. Jones	CY 0021	4281

7590 03/26/2004

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EXAMINER

RAO, SHRINIVAS H

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/920,374

Applicant(s)

JONES ET AL.

Examiner

Steven H. Rao

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03/17/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7/31/01 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

The Application as presently filed does not claim priority from any prior filed patent Application , therefore the earliest available filling date is the U.S. filling date namely July 31, 2001

Request for Continued Examination Application

The request filed on 11/24/2003 for a Request for Continued Examination (RCE) under 37 CFR 1.114 based on parent Application No. 09/920374 is acceptable and a RCE has been established. An action on the RCE follows.

Preliminary Amendment Status

Acknowledgment is made of entry of amendment filed on 10/06/2003 (entered on January 20, 2004) and the Supplemental amendment faxed on March 17, 2004 .

Therefore claims 1-20 as recited in the Supplemental amendment of March 17, 2004 are currently pending in the Application.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2814

Claims 1, 12 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1,12 and 17 the phrase "known good reticle pattern" renders the claim indefinite .

It is not clear what Applicants' intend to include/exclude by the expression "good reticle pattern, further the prior art nor Applicants' specification pattern" .

Dependent claims 2-11 , 13-16 and 18-20 are rejected at least for depending upon rejected claims 1,12 and 17.

Claim 9 the recitation, " in the general range about " similarly the claim 9 indefinite.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent No. 6,303, 459, herein after Chen) .

With respect to claim1 , to the extent understood, Chen describes A method of verifying a reticle, comprising the steps of: providing a substrate having a uniform surface (Chen figure 1 # 10, col. 5 line 55) depositing, a non resist layer over the

Art Unit: 2814

uniform surface of the substrate, (Chen figure 1 # 14) forming a layer of resist over the non resist layer; (Chen figure 2 # 12, col. 6 line 17) forming a reticle pattern in the layer of resist, (Chen col. 6 line 17) transferring the reticle pattern to the non resist layer (Chen col. 6 lines 2-23), forming a conformal layer over the non resist deposited layer, (Chen figure 1 #16 over non resist layer 14) wherein the non resist deposit layer includes a transferred reticle pattern, (Chen col. Col. 6 lines 22-24).

Chen does not specifically mention at least a portion of the transferred reticle pattern extending through the nonresist deposited layer.

However, Brown in figure 1 figure marked "hybrid", etc. shows at least a portion of the transferred reticle pattern extending through the nonresist deposited layer to accurately pattern the gate material layer into in to the regions for the gate, source and drain which method results in an improved transistor structure without excessive fabrication steps.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Brown's teaching of at least a portion of the transferred reticle pattern extending through the nonresist deposited layer in Chen's method, the motivation to make the above combination is to accurately pattern the gate material layer into in to the regions for the gate, source and drain which method results in an improved transistor structure without excessive fabrication steps. (Brown col. 2 lines 34-50).

The remaining limitation of claim1 is :

Art Unit: 2814

and inspecting the transferred reticle pattern for defects by comparing the transferred reticle pattern with "a known good" reticle pattern (Chen col. 2 lines 60 to 63).

With respect to claims 2 and 3, to the extent understood, wherein the conformal layer comprises a conductive material namely titanium (Chen fig. 1 # 16, col. 5 lines 66 to col. 6 lines 4).

With respect to claim 4, to the extent understood, wherein the conformal layer further comprises a plurality of stacked layers comprising a layer of titanium nitride formed over a layer of titanium. (Chen col. 6 line 5-6 and col. 5 lines 66 to col. 6 lines 4).

With respect to claim 6, to the extent understood, wherein conformal layer has a thickness of no more than 1000°A . (Chen col. 6 line 4 $500\text{-}1000^{\circ}\text{A}$).

With respect to claim 7 to the extent understood, the nonresist layer is silicon oxide (Chen col. 5 lines 59-60).

With respect to claim 8, to the extent understood, wherein the nonresist layer comprises of layer of undoped silicon dioxide formed on a layer of phosphosilicate glass (PSG). (Chen col. 7 lines 1-3 silicon dioxide layer and col. 5 lines 65 to col. 6 line 5-PSG layer).

With respect to claims 9 and 10 to the extent understood, wherein the thickness of the nonresist layer is in the general range of about 2500 to 6000°A . (Chen col. 8 lines deposited layer $\text{--}3000$ to 8000°A).

Art Unit: 2814

With respect to claim 11, wherein the uniform substrate surface comprises a silicon . (Chen fig. 1 # 10, col. 5 line 55).

With respect to claim 12 to the extent understood, Chen describes a method of verifying a reticle, comprising the steps of : all steps of claim repeated and the above rejection under claim1 incorporated herein by reference .

Claim12 further recites " the conformal layer to be "conductive " (Chen fig. 1 # 16, col. 5 lines 66 to col. 6 lines 4) and has a thickness of at least 100 angstroms. (Chen col. 6 line 4 500-1000⁰ A).

With respect to claim 13, to the extent understood, wherein inspecting the transferred pattern comprises with automatic pattern inspecting equipment (Chen col. 2 lines 58 to 60).

With respect to claim 14, to the extent understood, wherein inspecting the transferred pattern includes automatically aligning the wafer in the automatic pattern inspection equipment with the transferred reticle pattern formed in the non-resist layer. (Chen col. 2 lines 58 to 64, col. 2 lines 52-55).

With respect to clam 15 to the extent understood the reticle pattern (Chen col. 3 lines 20 to 35).

With respect to claim 16, to the extent understood, wherein the step of transferring the reticle pattern to the non-resist layer includes etching the deposited layer (Chen figure 3 col. 6 lines 27 to 46) removing the patterned layer of resist (Chen figs. 2 and 3 , during the etching of layer 16).

Art Unit: 2814

With respect to claim 17 , to the extent understood, Chen describes a method of verifying a reticle, comprising the steps of : all steps of claim repeated and the above rejection under claim1 incorporated herein by reference .

Claim 17 further recites forming a conformal layer over the non-resist layer to thereby increase contrast between patterned and non-patterned portions of the non-resist layer . (Chen col. 2 lines 60 to 63, increasing contrast in an inherent property of the materials used, and as the same materials are used by the references for the same purpose as Applicants' what is true for Applicants' namely increasing contrast is also true for the references).

With respect to claim 18, wherein the nonresist layer comprises depositing silicon oxide containing layer (Chen col. 5 lines 59-61).

With respect to claim 19, wherein the conformal layer comprises depositing a conductive conformal layer (Chen fig. 1 # 16, col. 5 lines 66 to col. 6 lines 4).

With respect to claim 20, wherein the conformal layer further comprises an interconnect adhering layer . (Chen col. 1 lines 60-61, col. 2 lines 64-66, col. 5 lines 27-30).

B. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen and Brown as applied to claims above and further in view of Leedy (U.S. Patent No. 5,985,693 herein after Leedy).

With respect to claim 5, wherein the reticle pattern in the deposited layer includes features having a minimum size L and the conformal layer has a thickness of no more than 2L.

Art Unit: 2814

Chen and Brown do not specifically mention the minimum size of its reticle pattern.

However, Leedy describes in col. 36 lines 34 to 40 describes making images in the size of 25um (L) and in col. 35 lines 9-10 describes the conformal layer of 2000 angstroms (i.e. less than 1/2 L thick) to allow application of inter connect metallization on both sides of I/C and a method by which thin films can be formed that allow efficient cooling of IC components of the circuit membrane and also formation of three dimensional structures through bonding of circuit membrane IC layers.

Therefore it would have been obvious to one of ordinary skill in the art to combine Leedy's image size (L) to conformal layer thickness (no more than 1/2L) ratio in the method of Chen in view of Brown to allow application of inter connect metallization on both sides of I/C and a method by which thin films can be formed that allow efficient cooling of IC components of the circuit membrane and also formation of three dimensional structures through bonding of circuit membrane IC layers. (Leedy col. 3 lines 50 to col. 4 lines 16).

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Steven H. Rao whose telephone number is (571) 272-1718. The examiner can normally be reached on Monday- Friday from approximately 7:00 a.m. to 5:00 p.m.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956. The Group facsimile number is (703) 872-9306.

SK
03/18/04

Wael Fahmy
SPE 2814